FORMATION OF COMPOUND SEMICONDUCTOR LAYER

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Abstract

PURPOSE:To form a group III-V semiconductor epitaxial layer of high quality and good surface flatness on a single crystal of non-polar or different lattice constant.
CONSTITUTION:An Al layer 2 of one atomic layer is formed on an Si substrate 1 at a low temperature of 400 deg.C or below and then P is supplied successively. The processes are repeated to form an Al P low temperature buffer layer 3. A GaP low temperature buffer layer 4, an AlAs low temperature buffer layer 5 and a GaAs low temperature buffer layer 6 are made to grow one by one thereon by a similar alternate supply method. A temperature is made to rise while supplying As and a Gaps buffer layer 8 is formed by an ordinary simultaneous supply method. Then, a temperature is lowered and an InAlAs low temperature buffer layer 9 and an InP low temperature buffer layer 10 are made to grow one by one by the alternate supply method. Thereafter, a temperature is made to rise while supplying P and an InP layer 11 is formed by the simultaneous supply method. Since two dimensional growth from an initial stage can be thereby acquired even on a single crystal of non-polar or different lattice constant, interface defective density can be reduced and dislocation due to thermal strain can be restrained from rising again.